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# **Profiteering and The Degree of Monopoly in the Great Recession: recent evidence from the US and the UK**

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## **Abstract**

While the onset of recession may lead some oligopolistic firms to engage in price cutting behaviour, we argue this is likely to be only a temporary phenomenon. As the recession deepens firms will find themselves with (unplanned) excess capacity, which will increase the mutual benefits of collusion and hence the degree of monopoly is likely to rise. To support this proposition and adopting a largely heterodox framework, we consider some historical evidence and present some recent data for both US and UK manufacturing and UK retail during the current prolonged slump that has been labelled 'The Great Recession'. Such behaviour has significant implications for economic recovery.

## **JEL Codes: L11, L12 and L40**

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## 1. Introduction

It is commonly perceived by many commentators that periods of economic downturn hasten falling prices and profitability, as firms respond to dramatic falls in demand. Indeed, mainstream neo-classical theory argues such a competitive response is necessary to restore demand (via a real balance effect) in the product market, with a concomitant adjustment process required in the labour market (typically requiring (simultaneous) cuts in real wages) to maintain employment levels and return to general equilibrium. However, in reality, modern capitalism is characterised by product markets which are highly concentrated and prices often diverge from the competitive level. It might be expected that the onset of an economic downturn will however, manifest itself in a move away from such (tacit) collusive arrangements and a fall in the degree of monopoly (designated as  $\mu$  and defined in terms of the price-cost margin). Clearly, recession causes a rise in firms' levels of (unplanned) excess capacity and this may create tensions within industries as firms seek to maintain their market share and profitability. Yet perversely to conventional logic, in seeking to maintain their profitability, firms may (in due course) find it in their mutual interests to collude ever more closely.

This latter possibility has been largely explored in the heterodox tradition - namely in Kaleckian and monopoly capital approaches - where researchers have theorised and found evidence, in previous depressions, that the price cost margin and the degree of monopoly ( $\mu$ ) has indeed risen due to firms finding it in their mutual interests to collude ever more closely or in a pure Kaleckian and other frameworks, rise from a decline in costs of raw materials with prices being relatively stable (see Sweezy, 1939; Kalecki, 1971; Cowling 1983). This outcome is important since a rise in the degree of monopoly ( $\mu$ ) during a downturn and with low levels of capacity utilisation, can prolong stagnation, raise unemployment and inflation and has implications for the distribution of income. These consequences (of a rise in  $\mu$ ) during a recession can occur irrespective of whether the economy is predominantly 'wage led' or 'profit led' in terms of its growth path<sup>1</sup>. Clearly, the (difficult) nature of the

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<sup>1</sup> In some recent Kaleckian models, the wider impact of a rise in the price-cost margin for effective demand will depend upon whether the growth of the economy is considered to be 'wage-led' or 'profit-led'. In 'wage led' states of the world, a lower wage share (resulting from a rise in  $\mu$ ) will reduce demand and prolong stagnation (due to under-consumption), while in 'profit-led' states, a rise in  $\mu$  will raise investment expenditures. However, the situation is more complex depending upon whether the distributive schedule (between wages and profits) is linear or non-linear (U shaped) and the level of capacity utilisation. For instance, Nikiforos and Foley (2012) have demonstrated that even in a 'profit led' world, where capacity utilisation is low, a re-distribution of income to wage earners would raise effective demand. Recent empirical evidence suggests that in both the US and the UK (as in other 'advanced' capitalist economies), growth is 'wage led' (see Onaran and Galanis, 2012).

adjustment processes in an oligopolistic world differs significantly from idealist (neoclassical) notions of a smooth transition to competitive equilibrium. Not surprisingly, the counter-cyclicality of price-cost margins continues to arouse excitement and much interest within the political economy literature (see d'Aspremont *et.al*, 2011).

In this paper, we explore the previous research on this salient issue and then present some new results for both US and UK manufacturing and the UK retail sectors on the degree of monopoly ( $\mu$ ) with regards to the recent period (2007-2011), which has been labelled 'The Great Recession'. While the relative contribution of manufacturing to these economies has declined to 11.9% (in the US) and 11.3% (in the UK) of total GDP, it is still an important sector for analysis particularly since, in both economies, manufacturing output is a significant input in other (non-manufacturing) sectors and the wider value chain (see Bureau of Economic Statistics, 2011, BIS, 2010)<sup>2</sup>. The UK retail sector (for which we also have data) accounted for approximately 20% of GDP in 2011 (ONS, 2012). Moreover focusing upon these sectors, allows some comparison with earlier studies. A key feature in our analysis will be the nature of collusive behaviour in modern capitalism. Adopting a framework which draws upon previous heterodox approaches, we will argue that in general there exists both rivalry and collusion within oligopolistic industries and this is bolstered by the presence of excess capacity; this itself is used as a means of strategic entry deterrence (Spence, 1977). While we may observe (headline) price cuts during a recessionary period, we argue that such behaviour is typically transient and is often an attempt (by firms) to restore optimal levels of inventory holdings or as an initial response to unplanned excess capacity.

The remainder of this paper is set out as follows. In Section 2, we set the scene by explaining the co-existence of rivalry and collusion in modern capitalist economies. In doing so, we also (briefly) take account of the impact of globalisation and transnational corporations in bolstering collusive behaviour. Section 3 then explores how (unplanned) excess capacity can bolster collusion in an economic downturn. Section 4 reviews the previous empirical evidence, while Section 5 presents evidence for the current slump (2007-2011) for both the US and UK. Finally, Section 6 briefly concludes.

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<sup>2</sup> In the US, manufacturing employs 12 million workers (9 % of the workforce) but is estimated to support 17.2 million jobs. Taken alone, US manufacturing output equates to being the 10<sup>th</sup> largest economy in the world (Bureau of Economic Statistics, 2011). In the UK, manufacturing is the third largest sector, directly employing 2.6 million workers (8% of the workforce).

## 2. Rising Industrial Concentration, Rivalry and Collusion

Modern capitalism is characterised by markets of the few; namely structures of monopoly and oligopolistic competition (Fellner, 1949). There is much evidence for these structures; rising concentration levels are widely observed across manufacturing, financial services, transport and energy, communication and information technology, retailing and distribution, hospital services, and the media. Much of this rise has stemmed from merger activity and market foreclosure by both domestic and foreign large firms (for recent evidence, see Cowling and Tomlinson, 2005; Pryor, 2001). Moreover, where markets have become more open to global competition, much of this trade is controlled by large transnational corporations (Rothschild, 2005) with imports having a tendency to reduce competition rather than raise it (Cowling et.al 2000; see Section 3). Indeed, Pryor (2001, p.314-315) has argued in the case of the USA, that rising industrial concentration has been supplemented by a significant growth in the number of international strategic alliances and partnerships, which often serve as cartels and lessen (domestic) market competition<sup>3</sup>.

Consequently, in modern capitalism with its highly concentrated and oligopolistic structures, we are likely to observe a high degree of strategic inter-dependence between firms, in particular over the distribution of market shares and price cost margins. This raises the possibility of (tacit) collusive outcomes and price-cost margins that differ significantly from the competitive level. Of course, if firms perceive deviance from an agreed collusive position as going undetected and/or unpunished by others, then the equilibrium is unstable and price cutting would occur. However, rising concentration levels facilitate easier inter-firm co-ordination as they reduce the costs of policing a (tacit) collusive agreement, since deviance is more easily detected and controlled (Stigler, 1964)<sup>4</sup>. In this regard, price cutting deviance may be typically punished with ‘tit for tat’ strategies employed by the compliant group until any one period gains (by the cheating firm(s)) are competed away. The quicker the compliant

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<sup>3</sup> In recent years, patterns of rising concentration have evolved most noticeably in the new global communication, information technology (IT) and media industries. These industries which were once considered by independent observers as opening up (global) markets to greater competition, although Daripa and Kapur (2001) warned that claims that e-commerce will lead to more (price) competition were over-stated and that in many online markets, industrial structures were likely to be even more concentrated. This indeed appears to be the case, with the emergence of a few dominant players such as Apple, Google and Microsoft (see Sugden et.al, 2009).

<sup>4</sup> Stigler’s (1964) model also suggests that lower concentration among buyers facilitates collusion among sellers. In this regard, concentrated sellers and atomistic buyers offer the most conducive conditions for effective collusion.

group is able to identify deviance and act, the more fleeting will be the benefits of such behaviour when compared to the higher (shared) industry profit margins inherent to collusion (Axelrod, 1984, Cubbin, 1988). This is likely to be supported with inter-firm communication (Williamson, 1965) and multimarket contact with familiarity breeding co-operation (Hughes and Oughton, 1993). Thus, rivalry and collusion (paradoxically) co-exist in concentrated markets; the closer the rivalry, the more immediate is the response to any attempt by a (cheating) firm to secure an advantage, but the very immediacy of the expected response serves to maintain the degree of collusion – competitive price cutting remains a potential rather than real. Instead, rivalry often surfaces in non-price spheres of competition such as advertising and product differentiation, where retaliatory lags are longer. Over time, such activities are likely to enhance the degree of monopoly power ( $\mu$ ).

There is some relatively recent published evidence on rising margins and more concentrated industrial structures. In UK retailing, Dobson and Waterson (1997) find that rising concentration correlates strongly with rising margins, while Claycombe (2000) concludes that concentration has a strong effect upon department store prices in the US. Similarly in the US, the price of hospital services is closely related to concentration (see Vita and Sacher, 1999), while Simpson (2001) detects little consumer switching in response to large price increases following hospital mergers. In European banking, Maudos and Fernandez de Guevara (2007) report rising margins in loan products in more concentrated markets. Finally, at the global level, Connor (2007) finds evidence of cartels and collusive pricing in the highly concentrated lysine, citric acid and vitamin industries.

Theoretically, the mere threat of potential entry can nullify monopoly power and ensure that price-cost margins remain close to the competitive level. In such situations existing monopoly/oligopoly positions are more apparent than real since they fail to account for disciplining effects of potential entrants. The industrial economics literature has traditionally focused upon entry limit pricing models, in both static and later more dynamic forms (Bain, 1956, Sylos-Labini, 1969)<sup>5</sup>. The static model relies upon low entry barriers to induce a competitive outcome with a largely homogeneous product. Entry itself will be conditioned by

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<sup>5</sup> Contestability can be seen as an extreme case and most economists generally argue that although it may serve as an interesting bench-mark, the conditions for contestability are not generally realised (see Martin, 1989 and also Gilbert, 1989).

the degree of scale economies, the elasticity of demand and market size (Modigliani, 1958)<sup>6</sup>. In the more dynamic form, a typical optimal price trajectory for the incumbent firms begins near the monopoly level and decays to a lower bound (see Jacquemin and Thisse, 1972). The key result of this literature is the optimal rate of entry for incumbents, which is consistent with the maximum flow of discounted profits, is non-zero. A trade-off between current profits and those in the future implies current prices will exceed the limit price, meaning future profits are lower due to entry; ‘making hay while the sun shines’.

### **3. Capacity, Recession and the Degree of Collusion**

An alternative view of the reaction to potential entry separates the price/output decision of the incumbent firms from that of how to deal with entry. According to Spence (1977), incumbents can deter entrants through investing in excess capacity; the idea being that entry is deterred if incumbents can effectively signal that they can raise their output faster than prospective entrants. Investment in excess capacity is consistent with incumbents’ current profit maximisation, since the investment occurs but the monopoly level of output (and price) is maintained; price is thus invariant to entry (this compares with entry-limit pricing models, where the additional capacity is utilised and price falls)<sup>7</sup>. In general, the excess capacity response has tended to dominate the limit price response to entry; excess capacity should be seen in its broader context and not just in terms of additional physical production capacity but rather in terms of advertising, R&D, marketing (brand proliferation) and distribution (for further details, see Cowling and Tomlinson, 2012)<sup>8</sup>.

Excess capacity also has implications for the degree of collusion within the incumbent group. Recall that the degree of collusion is primarily a function of the speed of retaliation to price

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6 Generally large scale economies, inelastic demand and a limited market make entry unattractive and lead to prices above marginal cost.

7 Spence has argued that separability can be achieved if marginal costs are invariant to the level of excess capacity. This is not necessarily the case, since excess capacity can itself result in lower marginal costs (and hence lower prices). The degree of monopoly ( $\mu$ ) does not necessarily change and would remain conditional upon the elasticity of demand and the degree of collusion.

8 Smiley (1988) first provided strong US based survey evidence on these type(s) of excess capacity, which he found was the most dominant form of strategic entry deterrence (limit pricing was found to be unimportant). Later evidence was uncovered for the UK, by Singh, Utton, and Waterson (1998). Also supportive is a study of Maxwell House Coffee, revealing attempts to secure extensive ‘featuring’ of their product in grocery outlets as a strategic response to entry (Nelson and Hilke, 1991); a study of supermarkets in the UK revealing firms using store openings to pre-empt rivals (Smith, 2000), and a study of US ready-to-eat cereals, with incumbents using advertising to limit entry (Thomas, 1999).

cutting by the compliant group of firms. The existence of excess capacity thus bolsters collusion by signalling to all participants that rivals can react immediately. In this sphere, retaliation is a more credible threat<sup>9</sup>. This is also particularly the case in markets where a powerful firm considers encroaching upon adjacent markets dominated by another such large firm(s), where the latter is a potential rival in the former's market; in such cases, excess capacity facilitates potential reciprocity in terms of rivalry and collusion – it provides firms with a strategic capability in terms of management, technology and marketing expertise to respond in kind. Changing circumstances may result in some market entry, but the norm is typically for firms to 'live-and-let-live' with collusive outcomes being observed (Baran and Sweezy, 1966).

At this juncture, it is important to qualify our analysis in the context of globalisation, since mainstream opinion is that import penetration and international trade act as a constraint upon domestic monopoly power. This argument however fails on several counts. First, in the case where domestic firms are merely processing imports, then their market power remains undisturbed. This is not just true of raw materials or intermediate goods, but is also of consumer goods, especially where these are controlled and distributed by oligopolistic firms. In such cases, their market positions are unlikely to be challenged and they are able to extract monopoly rents. Secondly, many imported goods are from affiliates of transnational corporations (which control international trade) and which have operations in the domestic economy; in such cases, imports lead to less not greater competition. For instance, Pryor (2001, p. 302), notes - in the case of the United States – that (for 1997) “*about 40% of all imports were accounted for by US multinationals importing from their foreign affiliates and an additional 30% came from imports of US branches of foreign MNEs from their parent company.*” He also suggests that imports from foreign cartels (with informal ties to domestic firms) also make up a significant proportion of US imports, and these again lessen competition. For the UK, Cowling et al. (2001) calculate import adjusted concentration ratios for the UK motor vehicle and truck industry, and also find that rising imports have not

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<sup>9</sup> In such circumstances, the degree of monopoly can be seen to rise with the threat of entry; an outcome that turns conventional wisdom on its head! Investment in excess capacity by incumbent firms seeking to deter entry also has the effect of bolstering collusion amongst existing incumbent firms (see Cowling and Tomlinson, 2012).



reduced concentration (or raised price competition) since the early 1970s<sup>10</sup>. Thus, in the context of domestic oligopolistic structures, the degree of collusion is unlikely to fall with globalisation irrespective of whether levels of excess capacity are held by either domestic or transnational firms. On the contrary, since transnationals hold global levels of excess capacity, there is greater potential for such firms to respond to rivals' aggressive behaviour in different geographical markets and this in turn will tend to re-enforce (and sustain) the degree of collusion (Graham, 1978; Hymer, 1976)<sup>11,12</sup>.

The analysis so far relates to periods of relatively stable economic activity, where the level of excess capacity is planned. With the onset of an economic downturn, capacity utilisation will fall resulting in unplanned excess capacity. However, in theory this unplanned excess capacity may also act as a credible deterrent not only to new entrants, but also to any competitive price cutting within the existing group. Indeed, in cases where the degree of collusion was imperfect in terms of monopoly price and output (which might occur in all but the most tightly coordinated oligopolies), firms might find that it is in their mutual interests to collude even more closely and (partially) resolve their joint problems during recession. A fall in demand might therefore be (jointly) countered by a bigger mark up on marginal cost. This is similar to the Sweezy (1939) result, where firms are reluctant to cut prices as they fear engineering a damaging price war.

The implication of this is that the degree of monopoly ( $\mu$ ) can rise in times of recession (even when firms are not forced out of the market due to distress) when collusion increases in response to mutual adversity; this occurs without encouraging entry due to the rise in (unplanned) excess capacity. Such a theoretical proposal does not, however, preclude price cuts or falls in the degree of monopoly ( $\mu$ ) as unplanned capacity rises but it does suggest that such phenomena is likely to be transient. With lags between production and sales, inventories will rise as demand falls or market growth is less than expected. Given the cost of holding

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<sup>10</sup> Calculating import adjusted concentration ratios is notoriously difficult, largely due to data inadequacies and thus such studies are rare and often sector specific (Cowling et.al 2001).

<sup>11</sup> The notion that transnational firms engage in 'strategic contingency' by matching each other's investments in similar locations has long been recognised in international business (Knickerbocker, 1973). For Graham (1978) these investments equate to an 'exchange of threats'. By recognising their (global) mutual forbearance, transnational firms minimise the damaging risk of open (cut-throat) competition, and are able to sustain a more stable (collusive) market environment (Graham, 1978; see also Tomlinson, 2005).

<sup>12</sup> Given the prominence of transnational corporations around the globe and particularly - in the context of the present study - within the US and UK, their strategic behaviour (and the extent to which they engage in collusive activities) has significant implications for the course of the economic cycle (for a full discussion, see Cowling and Tomlinson, 2005), including prolonging the length of the recession by maintaining price-cost margins above the competitive level (see below).

inventories, temporary price cuts often serve to entice consumers to move forward their purchase decisions so as to allow firms to restore their inventories to planned levels (which also fall in response to declining demand). While it is possible to reduce inventories through a temporary reduction in output below the new (recessionary) equilibrium level, it is generally least costly to cut inventory levels through a temporary price cut<sup>13</sup>. Advertised ‘price cuts’ by firms in the current recession may therefore reflect a temporary response to excessive inventory holdings, rather than being a long term response to lower, stagnant demand<sup>14, 15</sup>.

While it may be the case that the initial reaction to unplanned excess capacity is price cutting, it is likely that such behaviour will sooner or later be seen by participants as being mutually destructive, and closer collusion is therefore likely to be (eventually) observed during recession<sup>16</sup>. There are a number of qualifications to this prediction. The first is that consumers are more responsive to price during recessionary periods and as a result, demand will become more price elastic (Harrod, 1936). However, while we may observe wider search being undertaken by some consumers (with the time) to seek out bargain buys, it is also true that consumers with lower real wages may switch from higher to lower priced varieties of products. It is important to note that this will *not* necessarily reduce the elasticity of demand for such varieties, but it will imply shifts in demand with very different implications for the pricing of such products. Secondly, in a few cases there may have existed, prior to the onset

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13 This is because production costs are generally inflexible in the short term. Consequently, at the margin, price cuts generate the firm some revenue per unit (of excess inventory), while a cut in production (below the new equilibrium) generates no revenue, but production costs are still incurred since temporary planned output is less than permanent planned output.

14 Rotemberg and Saloner (1986) draw a similar conclusion. In their model, they demonstrate that the incentives to cheat on a collusive agreement are greater in periods of higher than normal demand since i) the one shot gains from cheating are greater during episodes of higher demand and ii). assuming independent and identical demand (i.d.d) shocks, cheating firms in boom periods anticipate punishment in the future when demand is expected to be lower and the sacrifice of collusive profits is expected to be less costly. Thus, to sustain compliance throughout the business cycle, collusion is likely to be more stable during recessions than in booms. In contrast, Haltiwanger and Harrington (1991) relax the assumption of i.d.d shocks, and model pricing behaviour using serially correlated changes in demand. They find that price cutting (and falling margins) between firms may occur at the beginning of the downturn (where demand has fallen, but remains relatively high) before collusion returns; this view is consistent with our point regarding transient price cuts and restoring inventories in the incipient stage of the recession.

15 Amelio and Biancini (2010) have shown that colluding firms may find it preferable to alternate price discounts between themselves to share the market inter-temporally so as to maximise firm and industry profits. It is feasible that such a strategy may also be observed throughout a recessionary period.

16 It is interesting to note that Kalecki (1971) made a similar point that firms facing a rising ratio of overhead to prime costs in recessionary periods had a tendency to tacitly collude to protect profitability by not reducing prices in the same proportion as prime costs.

of recession induced level of excess capacity, a fundamental power asymmetry within the incumbent oligopoly group that was either not recognised or acted upon. Recession may thus provide the more powerful actors with an opportunity to gain market share at the expense of weaker rivals, perhaps through a period of predatory pricing. Such price cuts associated with this strategy are transient since they are designed to eliminate rivals so as to attain a higher degree of monopoly in the long run (Roberts, 1986). Third, a further possibility is increased merger activity in response to recession. This will again serve to raise the degree of monopoly during a recession, although this is achieved through changes in market structure rather than through predatory pricing or increases in collusion for a given level of concentration. This process is most likely to occur where it is difficult to initiate or maintain a higher degree of collusion due to differing circumstances affecting participants (Scherer, 1980)<sup>17</sup>. Finally, and related to this, is the issue of multi-plant firms, which may result from merger and would also include transnational corporations (Cowling, 1983). Such firms are generally more flexible in adapting to falling demand and can maintain prices (or raise them) since surplus plants can be closed, whereas single plant firms may find it difficult to operate efficiently at output levels well below capacity<sup>18</sup>. While giant firms rarely exit markets, even in recessionary periods, it is not unusual for plants to be closed; with a one plant firm, price cuts may be necessary for survivability – or rather, given the decision to continue, it becomes profitable to use the plant for production.

#### **4. Previous Empirical Evidence**

There are few empirical papers that consider pricing behaviour specifically over periods of recession and/or extended stagnation. Most studies relate to the Great Depression of the 1930s, with two distinct views of changes in price cost margins being put forward. First, Kalecki's (1971) estimates of US manufacturing and retailing suggested a rise in the degree of monopoly during the depression and a decline in the subsequent recovery; he found that while prices in manufacturing and retailing fell, they did not fall as fast as marginal cost<sup>19</sup>. The counter-view by Ross (1975) found a narrowing in price-cost margins over the same

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17 The merger solution may be helped and encouraged by state intervention, as occurred in the UK during the 1930s and more recently, as in the case of the UK and US financial sectors (Branston et.al, 2012).

18 Scherer (1980) briefly mentions the easy adaptability of multi-plant firms to falling demand where plants are of varying efficiency (although the varying efficiency is not a requirement).

19 Kalecki's (1971) estimates found in general that the degree of monopoly (expressed as  $p/mc$ ) rose for total manufacturing from 139.4 in 1929 to 142.8 in 1933; for retailing the rise was from 142 to 148.8.

period of the depression. However, the differences are more apparent than real, relating to the precise definition of the price cost margin. Kalecki, for instance, considers price relative to marginal cost (which were taken as the wages of manual workers) whereas Ross estimates price-marginal cost margins per unit of output. In Ross's case, the degree of monopoly ( $\mu$ ) calculation is likely to be biased downward in times of falling prices (as occurred in the Great Depression); the difference in price and marginal cost may narrow, but still increase *relative* to either price or marginal cost. For historical comparison, only the ratio measure ( $p/mc$  or  $(p-mc)/p$ ) is of general interest or relevance; thus Ross's estimates – during a period in which both price and marginal cost fell – are likely to be misleading<sup>20</sup>.

In addition to these generic studies, Scherer (1980) has also provided some varied case study evidence for the degree of monopoly for the 1930s. In steel and aluminium, for instance, price levels were generally maintained during the Depression, while for rayon and cement substantial price cuts were recorded. The period though was one of sharp falls in raw material and energy prices (as a result of the massive drop in demand) and so it does not necessarily follow that price cuts in manufacturing were inconsistent with a rising degree of monopoly power ( $\mu$ ). In the case of rayon a number of explicit fixed price agreements were in place during the 1930s, which were re-enforced by accounting checks and a lack of new competition; where rayon prices did move downwards these most likely reflected falling demand (and stock adjustments) in the initial stages of the downturn, before collusive behaviour returned (see Gallet & Schroeter, 1995). In other work, Scherer (1972) also considered the deep US recession in the mid-1950s, where he found that significant falls (17%) in the price cost margin during the downturn for industries where the four-firm concentration ratio was less than 40%, but only a minor fall (2%) for more concentrated industries. However, there are again issues of measurement to consider which can cloud the picture. In this case, Scherer's estimate of costs includes both production worker costs and fixed (overhead) labour costs (administrative, marketing, technical and clerical staff). As capacity utilisation falls during a recession, average fixed costs rise considerably and so

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20 Ross (1975) estimates  $p - mc$  by taking the ratio of value of output minus wage and material costs to an index of output. Assuming constant marginal costs, this is written as  $(pQ - mcQ)/Q$ . In contrast, a reasonable definition of the degree of monopoly would include the total value of output in the denominator i.e.  $(pQ - mcQ)/pQ$  (see Cowling, 1982). It is worth noting Kalecki's (1971) approach, which defined marginal cost in terms of the wage costs of production workers, plus the cost of materials (or costs of bought in merchandise, in the case of retailing). The ratio of price to marginal cost was estimated as the ratio of sales revenue to prime costs (wages plus materials) in manufacturing and the ratio of proceeds to materials bill in the case of retailing.

price-cost margins incorporating fixed labour costs may fall even though the ratio of price to marginal cost may be rising.

The last significant study focusing upon price-cost margins during a specific period of stagnation is Cowling's (1983) study of the UK in the 1970s. This study defined the degree of monopoly as the ratio of gross output minus wage and material costs to gross output and the study considered UK industries at the 3-digit level of Standard Industrial Classification (SIC). The study found that between 1975 and 1979, almost twice as many industries (99 v 54) recorded a rise in degree of monopoly ( $\mu$ ) - a result consistent with the hypothesis that firms will seek to collude even closer in difficult times. Half of the industries studied had higher mark ups than in 1972, the benchmark year chosen, when  $\mu$  for total manufacturing was at a post-World War II peak.

Finally, it is worth briefly mentioning two longitudinal studies of price-cost margins over the entire US business cycle. The first by Domowitz *et.al* (1986) examined changes in price-cost margins across 284 US manufacturing industries over the period 1958 to 1981. They uncovered a narrowing of price cost margins in more concentrated vis-à-vis less concentrated industries over the period, which they attribute to greater sensitivity of the highly concentrated industries to demand fluctuations. Since the study found that prices were sticky, the implication was that costs in highly concentrated industries were counter-cyclical (and thus price-cost margins were pro-cyclical). However, these conclusions are disputed by Goldstein (1994), who finds an omitted variable bias (input price changes) in the Domowitz (1986) study which substantially reduces the estimated cyclical effect on costs. Correcting for this, Goldstein (1994), using a smaller sample, finds the reverse with margins in highly concentrated industries being counter-cyclical.

The second major longitudinal study is by Bils (1987) which adopts a New Keynesian framework to explore the cyclical behaviour of prices and marginal costs for annual two-digit US manufacturing data from 1956 through to 1983. In calculating marginal cost, Bils pays particular attention to the marginal wage, which is adjusted for hours worked; these are considered largely pro-cyclical with demand and average wages a positive/negative function of hours worked due to flexible overtime premia. His results show that across most US two-digit industries, short-run marginal costs (and real wages) are highly pro-cyclical, whereas prices are sticky and thus the price-marginal cost margin is markedly countercyclical. Such

results are consistent with Kalecki's observations, with Bil's concluding that '*imperfections in goods markets play a primary role in the cycle*' (p.854).

## **5. Empirical Evidence for the Great Recession (2007-2011)**

The aim in this paper is to explore the behaviour of the degree of monopoly since the onset of the current global economic slump; given data availability, we cover the period 2007-2011 for US manufacturing and 2008-2011 for the UK manufacturing and retail sectors. As mentioned earlier, these sectors remain important in both economies (see footnote 2) while the ensuing analysis will also facilitate some comparison with the aforementioned earlier studies. In doing so, we utilise a version of the standard Lerner index  $((p-c)/p)$  to capture the degree of monopoly, although we note other measures of monopoly power have been used (see for instance Ross (1975), Gordon, (1998)). Nevertheless, the Lerner index is the most appropriate index of market power and has the advantage over other indicators, since it allows the degree of monopoly power ( $\mu$ ) to be proxied at the plant level and it also captures the changes in  $\mu$  over the time period analysed. Finally, we follow convention in assuming firms (and industries) operate with constant returns to scale, which seems reasonable given previous empirical observation that this occurs (particularly in manufacturing) for a significantly wide range of output (see, for instance, Burnside et.al, 1995). This allows us to align our theoretical considerations in relation to the mark up on marginal cost with the empirical data, which relates to price-average cost.

For both US and UK manufacturing industry,  $\mu$  is defined as Sales Turnover less material costs and wages, relative to Sales Turnover. This is the standard measure of the degree of monopoly, although as noted above it encounters a potential problem in that some wage costs also include fixed costs, and average fixed costs tend to rise during a downturn thus biasing the true picture. This may however, be less of a problem in the modern global economy as manufacturing firms have increasingly reduced the fixed component of labour costs in favour of variable costs (see Coffey and Tomlinson, 2006). For both economies, manufacturing data was thus collated on business turnover, the cost of purchases, and payroll costs. The latter predominantly capture wage costs but also fringe benefits (where these are applicable) and are the closest available measure of variable labour costs. For the UK retail sector,  $\mu$  is simply Sales Turnover less material costs relative to Sales Turnover; thus fixed and variable labour costs are automatically ignored in the calculation – the measure may therefore downplay the importance of fixed costs, which seems more relevant in this sector of the economy

(Cowling, 1983). Finally, a further caveat to consider is that in deriving estimates of  $\mu$  even over a relatively small time-frame, we encounter the problem of possible changes in the degree of vertical integration. Census data is reported at the plant level, which means that any changes in vertical integration can cloud the picture (see Cowling, 1982). A potential solution is to deduct intra-industry trade from the denominator of the degree of monopoly ( $\mu$ ) estimate to provide a better reflection, but this is not possible due to lack of suitable data.

For the US, complete data sets were collated for 85 manufacturing industries at the 4 digit Standard Industrial Classification (SIC) code for the period 2007-2011, from the Annual Survey of Manufactures and the 2007 quinquennial Economic Census, both of which are published by the US Census Bureau. In the case of the UK, data was obtained from the Annual Business Inquiry published by the Office for National Statistics. A complete data set was available at the 4 digit (SIC) level for 155 UK manufacturing industries and 34 retail sectors for the period 2008-2011<sup>21</sup>. Due to the different industry definitions and classifications used in each country, the US and UK datasets are not directly comparable on a sector by sector basis. However, by considering the behaviour of  $\mu$  across sectors within each country over the period 2007-2011 it is possible to draw some inferences about pricing behaviour and possible collusion in both economies during the down-turn. Moreover, there is an interesting comparison in the general behaviour of  $\mu$  in both economies over the time-frame since, while the US and the UK entered The Great Recession at around the same time (2007-2008), their economic cycles have been uniquely different. For instance, in the case of the US, the recession began in 2007 and reached its nadir in 2009 (where US output fell by an extraordinary 6.8%), but largely through an expansionist fiscal policy the economy has since embarked upon a fragile recovery (US Bureau of Economic Analysis, 2013). In contrast, in the UK, the stagnation has not only been deep but has also been stubbornly

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21 While it would have been interesting to also consider the behaviour of  $\mu$  during the relatively benign period of 1992-2007 (the so-called 'new golden age'), significant changes in the classification of SIC codes has made such an exercise difficult to draw any meaningful conclusions. Indeed, in both the US and the UK, the SIC codes were most recently reclassified in 2007. Thus in both countries, tracking  $\mu$  through earlier periods is problematic as many sectors have been re-categorised (with changes in SIC codes), which makes it difficult to interpret the data consistently over a long time period even within a single country. For purposes of this paper, we are primarily interested in the behaviour of  $\mu$  during the Great Recession (and in the case of the US, the beginning of the recovery), for which consistent data on the construction of  $\mu$  is available. Where possible 4 SIC digit industries were used; where this was not available the 3 digit SIC was used, with care being taken not to double count industries.

persistent as there continue to be concerns as to when sustained economic recovery will occur due, with the economy experiencing inconsistent and almost zero levels of growth and a ‘double-dip’ recession.

The results, by industry and for each country, are presented in Tables 1 (US manufacturing), Table 2a and b (UK manufacturing and retail). In each table, data on  $\mu$  is reported for the whole of the manufacturing (and retail) sectors for the relevant time-period and for the 25 largest US and UK manufacturing industries and the 15 largest UK retail sectors (these sectors being determined by the share of output). While we first report (below) on the behaviour of  $\mu$  for all of the sectors in our data set, it seemed appropriate to focus on the largest sectors since these typically will have the greatest impact upon the wider economy<sup>22</sup>.

#### **INSERT TABLES 1 and 2 (a and b) HERE**

First the US, and during the period of the Great Recession  $\mu$  rose in 41 industries but fell in 44; during the subsequent recovery (2010-2011)  $\mu$  again rose in 40 industries but fell in 45. At first glance, the data appears to reveal an ambiguous picture on the general behaviour of  $\mu$ ; there is no discernible conclusion as to whether  $\mu$  rises or falls in recession. However, if we consider the largest 25 US industries (from the 85) and which in aggregate account for 67.07% of US manufacturing output, we see that  $\mu$  rises in over twice as many cases as it falls (18 cases recording a rise and 7 a fall) during the recessionary period, while the opposite occurs in the recovery. Moreover, the picture for total manufacturing is the same (see Table 1)). Intriguingly, this is the mirror of Kalecki’s (1971) results for the US economy during the Great Depression which we discussed earlier! In times of adversity, US manufacturers generally appear to collude over prices ever more closely. Finally, while some commentators may be surprised to see  $\mu$  fall back again in recovery, such behaviour reflects firms seeking to exploit the opportunities offered by a growing market. As further gains in market shares during the recovery begin to dwindle, we might expect a tightening in  $\mu$ . Indeed, early inferences from recent press reports of collusive pricing suggest this might be the case. For instance, in the \$6 billion dollar cereals market, the major transnational players, General

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<sup>22</sup> We are grateful to an anonymous participant at the CRESC Annual Conference, University of Manchester, UK on 6<sup>th</sup> September, 2012 for making this point. Full details of calculations of  $\mu$  for all sectors are available from the authors on request.



Mills, Kellogg and Ralcorp quickly reversed their strategy of engaging in a period of aggressive price cuts (during 2010), as this was seriously undermining profitability. As the dust settled, prices (and profits) started to rise again in 2011 (The Wall Street Journal, 21/9/2011). Similarly, in the US mobile phone market, media news of price cuts for certain pricing plans were described by industry analysts as '*not overly aggressive*' and '*stopped short of a damaging price war*' (The Guardian, 27/10/2009).

Turning to the UK, over the recessionary period 2008 to 2011 the overall level of  $\mu$  in manufacturing rose over the period (from 0.1726 to 0.1833). Moreover, in 90 cases a rise in  $\mu$  was recorded, while it fell in 65 cases. In the 25 largest industries (accounting for 47.5% of output),  $\mu$  rose in 19 cases while falling in 6. These results are similar to those reported for the largest US industries at the downward stage of the economic cycle. For the UK the results are particularly concerning, since at the time of writing, it is unclear as to whether the economy has yet to reach the bottom of the cycle; it may be that the degree of monopoly will rise even further in the UK. It is also interesting to compare these results, with those reported in Cowling (1983) for an earlier period of economic stagnation in the UK economy, 1975-1979. Although this period preceded the major slump of 1980 to 1982, Cowling's results show that more UK manufacturing industries (99 to 54) experienced a rise in  $\mu$  than a fall, suggesting firms are quicker to anticipate the consequences of a declining economy and the importance of closer collusion in such difficult times.

Table 2(b) presents the results for UK retailing. The UK High Street has been notably affected during the Great Recession, as demand has collapsed and this may have affected the general level of  $\mu$ . Indeed, of the 34 retail sectors, only 13 recorded a rise in  $\mu$  and 21 a fall. However, a closer look at Table 2(b) reveals some revealing results. In the 15 largest sectors (which account for 90.5% of sales), 6 record a rise in  $\mu$  and 9 a fall. Thus the picture becomes more ambiguous. However, the largest retail sector by far is 'Retail sales in non-specialised stores with food, beverages and tobacco predominating' (SIC 47.11) and includes supermarkets, convenience stores and off-licences. This sector thus captures the retail sales and the consumption of daily essentials. Here the degree of monopoly has risen by 3.7% over the period. Indeed, concerns about UK supermarket pricing have been prevalent during the recession. For instance, in Autumn 2011, the four major UK supermarkets – Tesco, Sainsbury, Asda (owned by the US retail giant, Walmart) and Morrisons - announced substantial price cuts across a large range of items. However, while this might indicate a price war and a move towards low price-cost margins, a respected BBC television documentary

team identified many of the products involved in the promotions as having seen prices rise in the weeks before they were cut. Other 'tricks' including more expensive bundled items - which misled consumers over price and value - were also found to be present. This led retail analyst Richard Perks to dismiss retailers' price war claims as a marketing mirage:

*'If there was a price war going on at the moment we would have seen profits falling, or we would have severe warnings, and that is just not happening'. (BBC, Panorama, 5/12/11).*

In addition, such behaviour is also reported in a recent study by Chakrabortya *et.al* (2011) into the micro pricing behaviour in groceries (the UK's most important consumer market) over a longer time-frame (2003-2008). They uncover behaviour that sharply differs from most previous work in this market, namely that overall basket prices have risen but at the same time, more individual prices have fallen than have risen! They point out this is consistent with supermarkets deliberately obscuring the general rise in basket prices, by discounting individual items. Given that, in such outlets, consumers generally purchase a basket of goods rather than individual items, this is a critical insight into how supermarkets can raise their degree of monopoly power while promoting the illusion of engaging in a competitive price war. This is particularly pertinent given the squeeze on household incomes during the current recession.

More widely the situation has also been mirrored elsewhere in UK consumer markets, where announced price cuts are not all what they seem. For instance, in the Spring of 2010, British Gas cut gas prices by an average of 7%, which was then matched by its main rivals, Npower, E.on Energy, Scottish and Southern Energy. However, such price cuts followed a long period of falling wholesale energy prices, implying the degree of monopoly power had been rising while retail prices were stagnant. Scott Byrom, an energy expert at Moneysupermarket, described the so-called price war as "*a price fisticuffs*", while Robert Hammond, energy expert at Consumer Focus, accused suppliers of operating "*with a pack mentality*". Referring to falling wholesale prices since 2008, he remarked "*our suppliers wait until the spring to pass on meagre price cuts - it is a model of how a competitive market shouldn't work*" (Utility Week, 10/3/2010)<sup>23</sup>. In related energy markets, there is now mounting evidence that the major oil producers – including BP and Shell - have been involved in colluding over oil prices for over a decade (The Guardian, 17/5/2013). Similarly, in petrol markets and again

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<sup>23</sup> Ofgem, the electricity markets regulator, have recently reported that average margins in electricity generation rose from 18.4% to 24.4% between 2010 and 2011 (The Guardian, 12/4/2013).

with specific reference to the strategies of UK supermarkets (which now are substantive petrol retailers), announced retail price cuts are often not what they seem and typically fail to match any parallel cuts in wholesale prices (The Guardian, 14/9/2011). Finally, in the market for international air travel, we see a growing trend of transnational companies bypassing measures that prevent mergers from taking place with the creation of joint ventures that co-ordinate flight schedules, share revenues and thus maximise profitability on certain routes. One such recent deal was announced in February 2012 when JAL and British Airways asked for clearance to create such co-ordination (The Financial Times, 9/2/2012). British Airways has had a similar deal in place with American Airlines and Iberia since 2010 (BBC News, 29/9/2010), and actually merged with Iberia in early 2011.

## 6. Concluding Comments

With the onset of recession, many commentators often predict significant price cuts and competitive price wars. However, while a stagnant economic climate may lead some oligopolistic firms to engage in price cutting behaviour, we have followed previous heterodox approaches in arguing this is likely to be only a temporary phenomenon. As the recession deepens firms will find themselves with unplanned excess capacity, meaning it is then in their mutual interests to collude more closely and thus the degree of monopoly is likely to rise. In this regard, this paper has considered historical evidence and presented some recent data (supplemented with some recent case examples) for US and UK manufacturing and the UK retail sectors during the current prolonged slump (2007-2011). As in the earlier work of Kalecki (1971) for the Great Depression, we find evidence that  $\mu$  has had a tendency to rise during The Great Recession in both economies (and, in the case of the US, fall in the subsequent (fiscally induced) recovery). Moreover, globalisation does not appear to militate against such trends; rather the presence and dominance of transnational corporations in both economies actually re-enforces collusion. Our conclusion is that perceptions of widespread price cutting during the Great Recession – as sometimes popularised in the media and regarded by neoclassical theory as a mechanism to restore general equilibrium – are somewhat wide of the mark.

As Kalecki, and Baran and Sweezy noted many years previously, such collusive behaviour by oligopolistic firms has important implications for the wider macro economy. Indeed, price stickiness and (rising) firm market power – a feature of oligopolistic structures - are a significant stumbling block to the recovery, regardless of whether the economy is ‘wage-led’

(as is both the US and the UK) or ‘profit-led’ at low levels of capacity utilisation (see Nikiforos and Foley, 2012; footnote 1). A rise in the degree of monopoly ( $\mu$ ) depresses real incomes, tightening even further household budgets, which in turn makes it difficult for the wider economy to recover from the crisis. As such, economic stagnation is likely to continue for a longer period than it necessarily should, since the economy is unable to correct itself in a Walrasian like manner. This raises a number of issues for policy, which are beyond the scope of this paper to deliberate in further detail. However, the evidence in this paper suggests the barriers to economic recovery are more fundamental than often perceived. The results also suggest that it would be wise for competition and anti-trust authorities to be ever more vigilant in dealing with collusive pricing behaviour during the current crisis. This may also include greater caution towards merger proposals (particularly those involving acquisitions by foreign transnational firms), since these in themselves lead to a rise in the degree of monopoly.

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<b>SIC (2 and 4 digit)</b>	<b>Industry (Table 1)</b>	<b>% Share of Total Manufacturing Output</b>	<b>2007 <math>\mu</math></b>	<b>2009 <math>\mu</math></b>	<b>2010 <math>\mu</math></b>	<b>2011 <math>\mu</math></b>	<b>Change in <math>\mu</math> 2007-2009</b>	<b>Change in <math>\mu</math> 2009-2011</b>
31-33	All manufacturing	100	0.3272	0.3310	0.328	0.3089	+	-
3241	Petroleum & coal products mfg	11.57	0.176	0.1354	0.1301	0.1329	-	-
3361	Motor vehicle mfg	4.85	0.2303	0.2271	0.2784	0.3376	-	+
3251	Basic chemical mfg	4.25	0.321	0.3261	0.3407	0.3259	+	-
3363	Motor vehicle parts mfg	3.88	0.2257	0.2694	0.2786	0.1735	+	-
3254	Pharmaceutical & medicine mfg	3.54	0.644	0.631	0.6143	0.6159	-	-
3364	Aerospace product & parts mfg	3.34	0.3497	0.3548	0.3598	0.225	+	-
3261	Plastics product mfg	3.2	0.3233	0.3354	0.327	0.308	+	-
3116	Animal slaughtering & processing	3.01	0.2273	0.2334	0.2376	0.1942	+	-
3345	Navigational, measuring, medical, & control instruments mfg	2.41	0.4039	0.4048	0.4019	0.4021	+	-
3344	Semiconductor & other electronic component mfg	2.31	0.4626	0.4728	0.5123	0.5524	+	+
3231	Printing & related support activities	1.94	0.3649	0.3471	0.356	0.3482	-	+
3311	Iron & steel mills & ferroalloy mfg	1.91	0.2886	0.1629	0.2549	0.2689	-	+
3252	Resin, syn rubber, & artificial syn fibers &	1.9	0.2714	0.3127	0.299	0.2269	+	-

	filaments mfg							
3222	Converted paper product mfg	1.81	0.2921	0.2986	0.292	0.298	+	-
3115	Dairy product mfg	1.72	0.2286	0.2669	0.2587	0.2392	+	-
3256	Soap, cleaning compound, & toilet preparation mfg	1.72	0.5022	0.4524	0.4703	0.4953	-	+
3323	Architectural & structural metals mfg	1.71	0.3035	0.2946	0.2846	0.2753	-	-
3331	Agriculture, construction, & mining machinery mfg	1.66	0.291	0.3151	0.3549	0.3289	+	+
3121	Breweries	1.65	0.4452	0.5588	0.6045	0.4474	+	-
3339	Other general purpose machinery mfg	1.65	0.3229	0.3292	0.3291	0.3383	+	+
3221	Pulp, paper, & paperboard mills	1.51	0.4101	0.4342	0.4178	0.4173	+	-
3391	Medical equipment & supplies mfg	1.48	0.5029	0.523	0.5172	0.5027	+	-
3119	Other food mfg	1.4	0.4692	0.4753	0.4761	0.4574	+	-
3329	Other fabricated metal product mfg	1.34	0.3727	0.381	0.3636	0.3602	+	-
3112	Grain & oilseed milling	1.31	0.2927	0.3228	0.3059	0.2789	+	-
	Total Share of US manufacturing (4 digit)	67.07%						
	Number of industries with rise in $\mu$ (leading 25 industries)						18	7
	Number of industries with fall in $\mu$ (leading 25 industries)						7	18

**Table 1 The Degree of Monopoly in US manufacturing during the Great Recession (2007-2011);  $\mu = (\text{Turnover} - (\text{wages and material costs}))/\text{Turnover}$**

**Table 2a The Degree of Monopoly in UK manufacturing during the Great Recession (2007-2011);  $\mu = (\text{Turnover} - (\text{wages and material costs}))/\text{Turnover}$**

<b>SIC (2 and 4 digit)</b>	<b>Industry</b>	<b>% Share of Total Manufacturing Output</b>	<b>2008 <math>\mu</math></b>	<b>2009 <math>\mu</math></b>	<b>2010 <math>\mu</math></b>	<b>2011 <math>\mu</math></b>	<b>Change in <math>\mu</math> 2008-2011</b>
10-33	All manufacturing	100	0.1726	0.1767	0.1893	0.1833	+
29.32	Manufacture of motor vehicle parts and accessories	3.12	0.0726	0.0528	0.1321	0.1394	+
28.11	Manufacture of engines and turbines	2.98	0.1582	0.1847	0.1794	0.2017	+
26.51	Manufacture of instruments and appliances	2.78	0.1794	0.1498	0.2146	0.1936	+
10.51	Operation of dairies and cheese making	2.76	0.0693	0.0651	0.0661	0.110	+
25.62	Machining	2.5	0.2360	0.2109	0.2164	0.2221	-
25.11	Manufacture of metal structures and parts	2.36	0.1445	0.1156	0.0739	0.1343	-
11.05	Manufacture of beer	2.27	N/A	0.4924	0.5202	0.5605	+
10.71	Manufacture of bread, cakes & pastries	2.21	0.1380	0.1574	0.1844	0.1545	+
10.89	Manufacture of other food products	2.20	0.1159	0.1004	0.0874	0.1913	+
10.13	Production of meat and poultry meat	2.04	0.1135	0.1209	0.0884	0.0652	-
10.11	Processing and preserving of meat	1.71	0.0601	0.0407	0.0706	0.1037	+
22.23	Manufacture of builders' ware of plastic	1.69	0.1634	0.1143	0.1692	0.2206	+
22.21	Manufacture of plastic plates, sheets, tubes	1.64	0.1189	0.0980	0.1134	0.1849	+

22.29	Manufacture of other plastic products	1.60	0.0873	0.1781	0.2024	0.1837	+
10.82	Manufacture of cocoa, chocolate and sugar	1.58	0.3078	0.2889	0.2929	0.2476	-
20.16	Manufacture of plastics in primary forms	1.55	0.0762	0.0399	0.1391	0.0712	-
10.91	Manufacture of prepared feeds for farm	1.53	0.0552	0.0354	0.0495	0.0687	+
20.59	Manufacture of other chemical products	1.52	0.1645	0.1268	0.1527	0.2848	+
11.07	Manufacture of soft drinks; production of	1.52	0.0769	0.1228	0.1473	0.1545	+
11.01	Distilling, rectifying and blending of spirits	1.44	0.3860	0.4359	0.4363	0.4812	+
17.21	Manufacture of corrugated paper and paperboard & containers	1.34	0.1081	0.0925	0.1088	0.1574	+
10.12	Processing and preserving of poultry meat	1.34	-0.1322	0.0362	0.0251	0.0259	+
16.23	Manufacture of builders carpentry and joinery	1.32	0.1530	0.1153	0.1300	0.1757	+
28.92	Manufacture of machinery for mining,	1.27	0.1416	0.1299	0.1116	0.0839	-
22.22	Manufacture of plastic packaging goods	1.23	0.1149	0.1505	0.1134	0.1536	+
	Total Share of US manufacturing (4 digit)	47.5%					
	Number of industries with rise in $\mu$ (leading 25 industries)						<b>19</b>

	Number of industries with fall in $\mu$ (leading 25 industries)						<b>6</b>
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**Table 2b The Degree of Monopoly in UK retailing during the Great Recession (2007-2011);  $\mu = (\text{Turnover} - \text{material costs})/\text{Turnover}$**

<b>SIC (2 and 4 digit)</b>	<b>Retail Sector</b>	<b>% Share of Total Retail Output</b>	<b>2008 <math>\mu</math></b>	<b>2009 <math>\mu</math></b>	<b>2010 <math>\mu</math></b>	<b>2011 <math>\mu</math></b>	<b>Change in <math>\mu</math> 2008-2011</b>
47	All Retail	100	0.2101	0.2200	0.214	0.2010	-
47.11	Retail sale in non-specialised stores with food, beverages and tobacco predominating	44.1	0.1561	0.1687	0.1669	0.1620	+
47.71	Retail of sale clothing in specialised stores	10.5	0.2893	0.3008	0.2849	0.2861	-
47.19	Other retail sale in non-specialised stores	8.4	0.2543	0.2415	0.2272	0.2104	-
47.91	Retail sale via mail order houses or via	3.98	0.2270	0.2051	0.1514	0.1210	-
47.78	Other retail sale of new goods in specialised	3.56	0.3368	0.3446	0.3576	0.2870	+
47.59	Retail sale of furniture, lighting equipment	3.29	0.2268	0.2669	0.2799	0.2345	+
47.73	Dispensing chemist in specialised stores	3.21	0.2208	0.2444	0.2330	0.2444	-
47.52	Retail sale of hardware, paints and glass	3.08	0.2653	0.2221	0.2125	0.2200	-
47.54	Retail sale of electrical household	2.47	0.1482	0.1526	0.1414	0.1468	-
47.64	Retail sale of sporting equipment in	1.82	0.2651	0.2420	0.2382	0.2084	-
47.77	Retail sale of watches and jewellery in	1.51	0.3151	0.3619	0.2985	0.2805	-
47.72	Retail sale of footwear and leather goods	1.28	0.2955	0.3178	0.3190	0.2838	-
47.76	Retail sale of flowers, plants, seeds,	1.24	0.3102	0.3459	0.3249	0.3359	+
47.62	Retail sale of newspapers and stationery	1.08	0.2694	0.2586	0.3017	0.2705	+

47.25	Retail sale of beverages in specialised	0.95	0.1449	0.1459	0.1341	0.1858	+
	Total Share of UK Retail	90.5%					
	Number of Retail sectors with rise in $\mu$ (leading 15 sectors)						<b>6</b>
	Number of Retail sectors with fall in $\mu$ (leading 15 sectors)						<b>9</b>



